

## Cheangwa Hill (440540)

The granite dome of Cheangwa is a conspicuous landmark on Murgoo Station, via Yalgoo, some ten miles south of the homestead. The road no longer runs past the hill, as shown on the Lands Department ten miles to the inch map, but four miles to the west of it. However, the hill can still be seen from the road. About ten yards east-south-east of the summit cairn is a small series of rock carvings, interesting because they appear to be very weathered and old, and because several of them are horseshoe figures exactly comparable to those of Yarrameedie gallery. Another, a symbolie outline, is too weathered to be readily recorded. The carvings are unknown to the station people.

## CONCLUSION

Many more sites undoubtedly remain to be found and described, but it is hoped that the few reported here will show the variety of well-preserved examples of aboriginal art that typify the area. Little mention has been made of artefacts, but grinding stones and chipped tools of various sizes are commonly associated with the major sites, and often found elsewhere, for example around waterholes, and would be a rewarding field of study.

I am particularly grateful to Miss Julitha Walsh for her help in compiling this record, both in the field and in subsequent discussion, and to Messrs. Timothy Scott, Eric Lindgren and Neil MacLaughlan for their company and help in some of the field work.

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## A CENSUS OF AQUATIC PLANTS OF WESTERN AUSTRALIA

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The aquatic vascular plants of Western Australia have received little attention from collectors and taxonomists since the publication of Bentham's *Flora Australiensis*. Apart from the work of Ostenfeld (1916) on the western sea-grasses, they have not been surveyed as an ecological grouping. Distribution records of western aquatics given in *Flora Australiensis* are fragmentary and there are few other published records of their distribution. This census

is an attempt to record the present state of knowledge of occurrence and distribution of aquatics in Western Australia. It will be apparent from this census that much more field work is needed before any accurate distribution pattern can be determined for most species.

In working on this ecological grouping of plants the authors realize the difficulties of limitation of the concept of an aquatic plant. Muenscher (1944) defined an aquatic as "... those species which normally start in water and must grow for at least a part of their life cycle in water, either completely submersed or emersed." Muenscher points out that this concept is subject to various interpretations, particularly in practice. As much as the authors agree with Muenscher's concept they cannot claim to be familiar with the life-histories of all Western Australian plants likely to come into the aquatic category. Therefore, apart from the obvious aquatics, it has been difficult to decide on inclusion or exclusion of the border-line species, but some marsh plants which are known to withstand long seasonal inundations are included. The algae of the Order Charales (stoneworts) are included as they are macroscopic plants commonly encountered in fresh waters by collectors of aquatics. A few exotic species with a single known record of naturalisation are included (e.g. *Salvinia* and *Nymphaea*) as it is likely that these species will spread through the countryside.

The localities given here for each species are those of specimens deposited either in the State Herbarium of the Department of Agriculture of Western Australia or in the Herbarium of the Botany Department of the University of Western Australia. Localities taken from literature are followed by the collector's name.

The authors wish to thank fellow members of the Fresh Water Group of the W.A. Naturalists' Club for their enthusiastic collecting of aquatic specimens. Indeed, the need for this census became apparent through the limnological activities of this group. Messrs. J. O. Knight, B. Parkes and Miss K. Vollprecht, in particular, made substantial collections of aquatics from the south-west of the State.

#### CHARALES

*Chara australis* R.Br.

= *Protochara australis* Woms. and Ophel

**Distribution.** Asia; New Zealand; Australia: W.A., Mingenew, Moora, Bibra Lake.

*Chara contraria* A.Br. ex Kuetzing

Cosmopolitan: Groves and Allen (1955) recorded it for Western Australia, but no locality was given.

*Chara fragilis* Desvaux

= *C. globularis* Thuill.

Cosmopolitan: W.A., Butler's Swamp, North Beach.

*Chara gymnopitys* A.Br.

= *C. fibrosa*, fide Zaneveld

Africa; Asia; Australia: W.A., Darlington.

*Chara leptopitys* A.Br. subsp. *sub-bracteata* Nordst.

Australia: W.A., Stirling Range (Nordstedt, 1891), Swan River district (Nordstedt, 1891), Cannington.

*Chara preissii* A.Br.

= *C. dichopitys* var. *preissii* A.Br.

= *C. ecklonii* A.Br. ex Kuetz.

Western Australia, Jandakot Swamp. Groves and Allen (1935) recorded this species from Western Australia but no locality was given.

*Lamprothamnium macropogon* (A.Br.) Ophel

= *Chara macropogon* A.Br.

Southern Australia: Common in seasonally saline pools and lakes throughout the South-West of Western Australia. Saline lakes near Perth, Rottnest Island, Narrogin, Dumbleyung, Wagin, Mandurah. Often much encrusted with sediments and salt crystals by the end of the growing season.

*Nitella congesta* (R.Br.) A.Br.

= *Chara congesta* R.Br.

Australia and New Zealand: W.A., Lake Leeuwin (Nordstedt, 1891).

*Nitella glocostachys* A.Br.

Throughout Australia: W.A., Shark Lake near Esperance, Jandakot Lake.

*Nitella subtilissima* A.Br.

Western Australia, Swan River district (Nordstedt, 1891), Parkeyerring Lake, Wagin.

R. D. Wood of the University of Rhode Island, recently visited southern Australia and collected Charales intensively in all States, including the South-West of Western Australia. When these collections are worked up it is anticipated that our knowledge of the taxonomy and distribution of our stoneworts will be greatly enlarged.

PARKERIACEAE

*Ceratopteris thalictroides* Brongn.

Widely distributed in tropical regions. Northern Australia: W.A., Walcott Inlet, MaeNamara Creek, Woollybutt Creek and Glenelg River in the Kimberleys (Fitzgerald, 1918). Sale, Glenelg and Calder Rivers, Bachsten Creek, in the Kimberleys (Gardner, 1923). Millstream on the Fortescue River. Plants free-floating or anchored in mud.



## SALVINIACEAE

*Azolla filiculoides* Lam. var. *rubra* Diels

= *Azolla rubra* R.Br.

The type is cosmopolitan: Our form occurs throughout Australia and New Zealand. Common in still waters of swamps and creeks of the coastal plain of Western Australia, Welshpool, Bayswater, and Yanehep.

*Salvinia auriculata* Aublet.

Central and South America: A common ornamental of garden ponds in Western Australia. There have been two instances of its escape and naturalisation at Welshpool (now eradicated) and at Harvey where it is flourishing in a swamp. The Harvey occurrence was noted by Smith (1960) under the name of *Salvinia rotundifolia*.

## MARSILEACEAE

*Marsilea angustifolia* R.Br.

Northern Australia: W.A., bases of Mounts House, Clifton and Brennan in the Kimberleys. In wet spots chiefly around billabongs (Fitzgerald, 1918). Billabongs near the Isdell River (Gardner, 1923).

*Marsilea drummondii* A.Br.

Nardoo

= *M. muelleri* A.Br.

Throughout Australia, except Tasmania: More common in arid parts of Australia where the fruits or "Nardoo" are collected by aborigines for food. Seasonally immersed, becoming stranded and dormant in the dry season. In clay pans, river banks and creeks at Charlotte Waters, Northern Territory; Western Australia, Gascoyne Junction, Cue, Galena, Irwin River, New Noreia, Miling, Mogumber, York, Upper Swan, Tineurrin, Geographe Bay (Oldfield).

*Marsilea hirsuta* R.Br.

Throughout arid Australia: W.A., Waleott Inlet, Duck Pool, Isdell River and near Mount Marmion (Gardner, 1923). Gogo, Carson River and Meda in the Kimberleys. South Barlee Range, Yalgoo. Chapman Research Station near Geraldton.

*Marsilea mutica* Mett.

Nardoo

= *M. brownii* A.Br.

= *M. quadrifolia* Benth. not of Linn.

Throughout Australia: Seasonally immersed. W.A., Carson River, West Kimberley (Gardner, 1923). Nookawarra Station and Glenorn in the North-West. In clay pans at Mingenew, Waroona, Coolup.

*Pilularia novae-hollandiae* A.Br.

Pill-wort

= *P. globulifera* Benth. not of Linn.

Southern Australia and New Zealand: W.A., in depressions of pasture land flooded in winter at Boyanup and Harvey. Semi-aquatic or marsh plant. Rare.

## ISOETACEAE

*Isoetes drummondii* A.Br.

Quillwort

Temperate Australia. In marshy soils of creek banks, swamps and clay pans. W.A., Mullewa, Mingenew, Cannington, Harvey, Tineurrin, Toodyay.

## TYPHACEAE

*Typha angustifolia* Linn.

Bulrush, Yanget

N. America; Europe; Asia; through Australia: W.A., abundant in inter-dunal swamps of the Swan coastal plain. Also in marshes and stagnant water inland. Calder River near Walcott Inlet, Port Warrender, Admiralty Gulf and Lawley River in the Kimberleys (Gardner, 1923). Rawlinson Range (E. Giles), bases of Mounts Brennan, Synott and Edkins Ranges (Fitzgerald, 1916), Carnarvon, Murchison River, Yanehep, Perth.

## POTAMOGETONACEAE

*Cymodocea angustata* Ostf.

Marine. Ostenfeld (1916) described this species from drift material collected at Carnarvon, W.A. A few specimens have been collected from drift at Fremantle and Flinders Bay, but there is no record of this species *in situ*. Specimens in State Herbarium, W.A. and Botany Herbarium, University of W.A.

*Cymodocea antarctica* (Labill.) Endl.

Sea Nymph

Marine. South-western and southern coasts of Australia: W.A., abundant in the sandy and muddy sub-littoral where it often occurs in dense stands. Carnarvon and Sharks Bay (Ostenfeld, 1916), Abrolhos Islands, Fremantle, Rottnest Island, Safety Bay, Bunbury, Busselton, Yallingup, Albany, Esperance.

*Cymodocea griffithii* J. M. Black

= *Cymodocea antarctica* var. *griffithii*

= *Pectinella griffithii* J. M. Black

Marine. Shallow sub-littoral as for *C. antarctica*. South Australia. Common in Western Australia, Dongara, Cottesloe, Safety Bay, Rottnest Island, Flinders Bay. Black (1915) distinguished this species from *C. antarctica* by the longer, straight and narrower leaves, the much larger leaf sheath and the female flowers without bracteoles. In our specimens the "comb-anchors" of *C. griffithii* are always much more slender than those of *C. antarctica*, the comb lobes of the former not exceeding 6 mm. while those of the latter are mostly about 10 mm.

*Cymodocea isoetifolia* Aschers.

Marine. Red Sea eastwards to Oceania: Edgecombe Bay in Queensland (Ostenfeld, 1916). Not known *in situ* in W.A. but common in drift, Carnarvon, Geraldton, Dongara, Fremantle, Safety Bay.

*Diplanthera uninervis* (Forsk.) Aschers.

Marine. Tropical coasts of the Indo-Pacific region. Red Sea to Oceania. Ostenfeld (1916) collected drift specimens at Carnarvon, Western Australia. There are no records of it *in situ* in W.A.

*Lepilaena australis* J. Drumm.      Austral Water Mat  
= *Althenia australis* (J. Drumm.) Aschers.

Southern Australia: W.A., common in brackish pools of rivers, brackish swamps and clay pans of the South-West. Hutt River (Oldfield), Mingenew, Moora, Wagin, Rottnest Island, Avon River at Toodyay.

*Lepilaena preissii* (Lehm.) F. Muell.      Slender Water Mat  
= *Althenia preissii* (Lehm.) Graebn. and including *L. cylindrocarpa* (Koern.) Benth.

Southern Australia. In fresh to brackish water of swamps and rivers throughout the North-West and South West of W.A., Rottnest Island, Canning River (Preiss), Kelmscott, Dale River at Beverley, North Stirling Range (F. Muell.), Cape Riche.

*Posidonia australis* Hook.f.      Fibre-ball Weed or Sea Grass

Marine. Southern Australia: W.A., in shallow sandy or muddy sub-littoral, usually in dense stands, Sharks Bay, Geraldton (Ostenfeld, 1916), Dongara, Fremantle, Garden Island, Rottnest Island, Yallingup, Cape Leeuwin, King George's Sound, Esperancee.

The fibre "sea balls" of winter drift are formed by aggregation of wood fibres released from the dead leaves and stems of *Posidonia*.

*Potamogeton drummondii* Benth.      Drummond's Pond Weed

Western Australia: In fresh water lakes and rivers, Lake Leschenault, Hill River, Shark Lake near Esperancee.

*Potamogeton javanicus* Hassk.

Africa; Madagascar; Asia; Northern Australia: W.A., MacNamara Creek and Mount House Station in the Kimberleys. Isdell, Charnley, Calder and Hann Rivers in the Kimberleys (Fitzgerald, 1918), Marble Bar.

*Potamogeton ochreatus* Raoul      Blunt Pondweed  
= *P. obtusifolius* Mert. et Koch  
= *P. obtusifolius* of F. Muell.

Throughout Australia: W.A., common in rivers and creeks of the South-West, Hill River, Gingin, Canning River, Herdsman's Lake, Wellard, Harvey, Balingup, Busselton, Manjimup.

*Potamogeton pectinatus* Linn.      Fennel Pondweed

Temperate regions of the world, Southern Australia: W.A., common in rivers and swamps of the South-West, in both fresh and brackish waters; Greenough River, Avon River at Toodyay, Guildford, coastal swamps about Perth, Vasse River.



*Potamogeton tricarinatus* F.Muell et A.Benn.

Floating Pondweed

= *P. natans* R.Br., partly; not of Linn.

Southern Australia: W.A., in rivers and fresh-water lakes, Barradale Crossing, Gascoyne River, Murehison River (Oldfield), Hill River, Caversham, Wellard, Narrogin, Busselton.

*Ruppia maritima* Linn.

Almost cosmopolitan. Throughout Australia: W.A., common and widely spread in fresh to brackish river pools and lakes, saline swamps and river estuaries. This species withstands the wide seasonal fluctuations of salinity characteristic of many of our river and lake systems. Murehison River (Oldfield), Hutt River, Coorow, Goomalling, Perth, Guildford, Rottnest Island, Rockingham, Mandurah, Arthur River, Wagin, Lake Muir, Dumbleyung.

*Zostera muelleri* Irmisch

Grass Wrack

Marine. Temperate coasts of Australia: W.A., in shallow sublittoral on sandy and muddy substrata. Rarely in large stands as some other sea grasses occur; Dongara, estuaries of Swan and Murray Rivers, Garden Island, Rottnest Island, Oyster Harbour at Albany.

#### NAJADACEAE

*Najas major* All.

Water Nymph

= *N. marina* Linn.

Cosmopolitan: W.A., common in rivers and swamps of the North-West and South-West, Roebourne, Millstream on Fortescue River, Wilga Mia Pool, Murehison River Bridge, Greenough River, Gwellup Lake, Perry's Lake near Perth.

*Najas tenuifolia* R.Br.

Throughout Australia: W.A., Kimberley and North-West Divisions, King Leopold Range, Carlton Hill, Mount Marmion, Lenard, Isdell, Charnley and Calder Rivers in the Kimberleys (Fitzgerald, 1918), Millstream and Deep Dale Stations in the North-West.

#### APONOGETONACEAE

*Aponogeton elongatus* F.Muell.

Northern Australia: northern New South Wales: W.A., Isdell, and Charnley Rivers, bases of Artesian, Synnott, Isdell and Edkins Ranges, and of Mount Rason in the Kimberleys (Fitzgerald, 1918), Merry's Creek on the Upper Glenelg River in the Kimberleys.

#### SCHEUCHZERIAEAE

*Triglochin procera* R.Br.

Water Ribbons

= *Cycnogeton procerum* (R.Br.) Buchen

Throughout Australia: Common in both stagnant and running waters of swamps, creeks and rivers of the South-West of Western Australia. Foliage varies considerably, ranging from short stout leaves when emerged under marsh conditions to narrow ribbon-

like leaves up to five feet in length when growing in swiftly flowing streams. W.A., Moore River, Gingin, Cannington, Mundaring, Kojonup, Dumbleyung, Balingup, Pemberton, Scott River, Albany.

*Triglochin pterocarpa* W.V.Fitzg.

W.A., Isdell and Charnley Rivers, Kimberleys (Fitzgerald, 1918). This species was described by Fitzgerald from the above collection.

*Triglochin striata* Ruiz et Pav.                      Streaked Arrow-Grass

North and South America; South Africa; Australia and New Zealand; A common marsh plant withstanding several months shallow submersion in fresh and saline lakes. W.A., Herdsman's Lake, saline lakes near Roekingham and Mandurah, Cape Leeuwin, Warriup, East Mount Barren.

ALISMACEAE

*Alisma oligococcum* F.Muell.

Ceylon and East India; Northern Australia: W.A., Meda and Mount Marmion in the Kimberleys, King Sound District (Froggatt), Lennard and Barker Rivers in the Kimberleys (Fitzgerald, 1918).

*Damasonium minus* (R.Br.) Buchen                      Star Fruit  
= *Damasonium australe* Salisb.

Marshy places throughout Australia: A semi-aquatic or marsh plant. W.A., Mingenew, Hamersley River.

HYDROCHARITACEAE

*Halophila ovalis* (R.Br.) Hook.f.

Marine. Indian and Pacific Oceans: Shallow sub-littoral along the coasts of Australia from Western Australia to Tasmania and Queensland. Groote Eylandt, Northern Territory: W.A., on sandy and muddy substrata. Geraldton (Ostenfeld, 1916), abundant in estuaries of the Swan and Murray Rivers, Fremantle, Safety Bay, Yallingup.

*Halophila spinulosa* (R.Br.) Aschers.

Marine. Queensland; Philippines; Java; W.A., Ostenfeld (1916) collected many drift specimens at Carnarvon which strongly suggests its occurrence on our coast. However, it has not been recorded *in situ* for W.A.

*Hydrilla verticillata* (Linn.) Casp.                      Water Thyme

Asia; India; Africa; throughout Australia: Not previously recorded for Western Australia but now known to be seasonally abundant in the Canning River at Cannington and in a swamp at Rottnest Island. These two occurrences may be naturalisations of plants escaped from garden ponds in Perth where *Hydrilla* is grown by aquarium enthusiasts.



*Maidenia rubra* (W.V.Fitzgerald) Rendle

A single collection by Fitzgerald from King River, Kimberleys, Western Australia. Holotype in State Herbarium, W.A.

*Ottelia ovalifolia* (R.Br.) L.C.Rich. Swamp Lily

Throughout Australia except Tasmania: In shallow ponds, swamps, creeks and river pools of the South-West of Western Australia. Mingenew, Canning River, Safety Bay, Armadale, Brunswick, Boyanup, Harvey, Torbay.

Juvenile plants superficially resemble *Vallisneria spiralis* before the floating lamina develop, but they may be distinguished from *Vallisneria* by the colour and thickness of the leaf.

*Vallisneria spiralis* Linn.

Cosmopolitan in the tropics and sub-tropics. Throughout Australia except the South-West of Western Australia, but introduced and naturalised at Araduen near Perth. W.A., May, Meda, Lennard, Fitzroy and Isdell Rivers in the Kimberleys (Fitzgerald, 1918), Kimberley Research Station, Marble Bar, Mount Marmion, Barradale Crossing.

CYPERACEAE

*Scirpus fluitans* Linn.

Throughout Australia. Common in swamps of the South-West of Western Australia. Marradong, Capel, Busselton, Donnybrook.

LEMNACEAE

*Lemna gibba* Linn. Gibbon's Duckweed

Cosmopolitan except the tropics: Recorded by Bentham (1863) for Western Australia as collected by Drummond and Oldfield. No other record.

*Lemna minor* Linn. Duckweed

Cosmopolitan except polar regions and the tropics: Eastern Australia; W.A., common in stagnant waters of swamps, drainage channels, creeks and rivers in the South-West, Yanehep, Cannington, Guildford and Vasse River.

*Lemna trisulca* Linn. Ivy Duckweed

Almost cosmopolitan; throughout Australia: W.A., Ord and Denham Rivers; Parry's Creek, Kimberley (Fitzgerald, 1918). Not known from the South-West of Western Australia, despite the occurrence of this species in other southern States.

*Spirodela oligorrhiza* (Kurz) Hegelm. Duckweed  
= *Lemna oligorrhiza* Kurz

Tropical Asia and America; throughout Australia; W.A., common in stagnant waters of swamps, rivers and creeks in the South-West. Usually associated with *Lemna minor* and *Azolla filiculoides*. Yanehep, Lake Monger, Cannington, Vasse River.

## ERIOCAULACEAE

### *Eriocaulon setaceum* Linn.

E. India and Malayan Archipelago; northern Australia; W.A., Woodhouse River (J. Bradshaw and Allen), Woollybutt Creek, base of Mount Rason, Artesian and Edkins Ranges, Isdell, Charnley and Calder Rivers, Kimberleys (Fitzgerald, 1918).

## PONTEDERIACEAE

### *Eichhornia crassipes* (Mart.) Solms      Water Hyacinth

Central and South America; naturalised in many warmer parts of the world including South Africa; Australia; New Zealand and Florida; W.A., Wanneroo, Monger's Lake, Dog Swamp, Manning Park. An escapee from local garden ponds.

### *Monochoria cyanea* F. Muell.

Northern Australia: W.A., Mount Marmion on Lennard River, West Kimberley, King Sound District (Froggatt). In billabongs along the side of Lennard, Fitzroy, Barker, Isdell and Adcock Rivers, bases of Mounts House and Clifton; Kimberleys (Fitzgerald, 1918).

## CERATOPHYLLACEAE

### *Ceratophyllum demersum* Linn.      Hornwort

Eastern Australia and much of the Old World. W.A., a single collection from Moore River.

## NYMPHACEAE

### *Nymphaea gigantea* Hook.

Northern Australia and New Guinea (Conard, 1905): W.A., Brooking Station on Fitzroy River, Gogo, Lower Prince Regent River, Lennard and Charnley Rivers northwards to King Edward and Drysdale Rivers, in billabongs or fringing the still pools of the larger rivers of the Kimberleys (Gardner, 1923), Millstream on the Fortescue River.

Two naturalisations of garden escapes of exotic Nymphaeas are known in the Vasse and Margaret Rivers in the South-West. Flowering material of these occurrences has not yet been collected.

## CRUCIFERAE

### *Nasturtium officinale* R.Br.      Water Cress

Temperate parts of the world. Introduced into many parts of the world from Europe: W.A., in creeks and drainage channels near habitation, Gingin, Cannington, Bayswater, Maylands, Brunswick River. Introduced and naturalised.

## DROSERACEAE

### *Aldrovanda vesiculosa* Linn.

S. France to Japan, south to Australia and tropical Africa (Lloyd, 1942), Northern Australia: W.A., Upper Isdell River, Kimberleys (Fitzgerald, 1918).

## CRASSULACEAE

### *Crassula natans* Thunb.

South Africa and Western Australia: W.A., Armadale (Ostenfeld, 1916), Newcastle (now Toodyay) (Diels and Pritzel, 1904).

### *Crassula recurva* (Hook.f.) Ostenf.

= *Tillaea recurva* Hook.f.

Temperate Australia: A semi-aquatic or marsh plant withstanding seasonal immersion in stagnant waters. Common in ditches and swamps. W.A., Mingenew, Ballidu, Toodyay, Rottnest Island (Preiss), Bayswater, Cannington, Gnangara, Guildford, Mandogalup, Tineurrin, Bunbury, Albany.

## CALLITRICHACEAE

### *Callitriche stagnalis* Scop.

Water Starwort

Almost cosmopolitan. North America; Europe; Asia; Australia and New Zealand: W.A., common in drainage channels, swamps and stagnant waters of rivers throughout the South-West, Mingenew, Hill River, Canning River, Harvey, Mandurah, Manjimup.

The genus is divided into 4-26 species according to the views of different botanists. Mason (1959) revised the species of *Callitriche* in New Zealand and Australia and concluded that the species attributed to *C. verna* Linn. in Australia are *C. stagnalis* Scop.

## HALORAGACEAE

### *Haloragis brownii* (Hook.f.) Schindler

= *Meionectes brownii* Hook.f.

Temperate Australia: A semi-aquatic of swamps and river edges. W.A., Guildford, Herdsman's Lake, Mandurah, Cape Leeuwin, Albany.

### *Myriophyllum amphibium* Labill. var. *latifolium* Schindler Broad-leaved Milfoil.

Southern Australia: Schindler (1905) claims Labillardiere collected this species in South-West Australia. No further records available.

### *Myriophyllum drummondii* Benth.

Bentham (1864) records Oldfield as having collected it at Geographe Bay. Bentham found the species to be close to *M. integrifolium*, possibly a variety of it. No further records.

### *Myriophyllum integrifolium* Hook.f. Small Milfoil

Temperate Australia: A semi-aquatic of creek banks and depressions subjected to seasonal inundations. W.A., Hamersley Range, Guildford, Swan River (Schindler, 1905), Eyre district (Diels and Pritzel).

### *Myriophyllum muelleri* Sond. Slender Milfoil

Southern Australia; Victoria; South Australia; W.A., Bentham (1864) gives its range in W.A. as King George's Sound to the eastward, based on Baxter's collections.



*Myriophyllum propinquum* A.Cunn. var. *genuinum* Schindler  
= *M. variaefolium* Hook.f.

Throughout Australia except the extreme north: W.A., Swan River to King George's Sound (Bentham, 1864), Guildford, Cannington, Kelmseott, Balingup, Bunbury.

*Myriophyllum verrucosum* Lindl. Red Milfoil

Throughout Australia: W.A., in creeks and marshy ground, Devil's Pass and Mount House in the Kimberleys, Marble Bar, Gaseoyne Junction, Murehison River (Oldfield).

#### UMBELLIFERAE

*Hydrocotyle lemnoides* Benth.

W.A., (Drummond). "A very small Lemna-like plant, evidently floating in water . . ." Bentham, 3, 1866: 345. No further record.

#### GENTIANACEAE

*Limnanthemum crenatum* F. Muell.

Tropical Australia; New South Wales; Victoria and South Australia: W.A., Meda, May, Lennard, Isdell and Charnley Rivers, Bell Creek, Kimberleys (Fitzgerald, 1918), Carlton Hill Station and Lennard River, West Kimberley. Not known from South-West Australia.

*Limnanthemum indicum* Thwaites.

Northern Australia; Northern New South Wales: W.A., Mount Marmion and Lennard River, West Kimberley, Lennard and Isdell Rivers, Kimberleys (Fitzgerald, 1918).

*Limnanthemum minimum* F. Muell.

Northern Australia: W.A., Aquatic to semi-aquatic. Lushington Brook, Prince Regent River and Isdell River, West Kimberley, York Sound (A. Cunningham), Isdell River, floating in water (Fitzgerald, 1918).

*Villarsia albiflora* F. Muell.

South-West of Western Australia: Noble Falls, Toodyay, Gnaragar, Cannington, Roleystone, Scott River.

#### LENTIBULARIACEAE

*Utricularia* spp. Bladderworts

Two collections of aquatic Utricularias are known from Western Australia. Bentham (1863) records a collection by Preiss of *U. ? flexuosa* from the Avon River. A barren floating specimen from Lake Gnangara is in the Herbarium of the Botany Department of the University of W.A.

The other nine species of *Utricularia* and the two species of the closely allied genus, *Polypompholyx*, recorded for Western Australia are all marsh plants.

## COMPOSITAE

*Cotula coronopifolia* Linn.

## Water Buttons

South Africa; Temperate South America; Temperate Australia: W.A., common in swamps and creeks of the South-West. Partly submerged, often becoming stranded on mud in summer. W.A., Gingin, Perth, Northam, Cunderdin, Cape Naturaliste, Pemberton, Gardner River, Phillips River.

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